

Appl. No. 09/415,481

Reply to Office action of February 25, 2005

**REMARKS**

In Response to the Office Action dated February 25, 2005, Applicant has amended several of the pending claims under 37 C.F.R. § 1.111 to clarify certain language and to emphasize certain unique elements that are not found in the prior art. More particularly, this Response amends claims 39, 55, 60, 64-78 and adds new claims 80-87. After entry of the above claim amendments, claims 39-43, 45, 55, and 60-87 (11 independent and 24 dependent, a total of 35 claims) are pending, and no new matter has been added by this Response. The fee for the newly-added claims is addressed in the Fee Determination Record accompanying this Response. Although no additional fees or extensions of time are believed to be required for entry of this Response, the Commissioner is authorized and requested to provide any extension and/or to debit any fees that may be required to avoid abandonment of this Application from Deposit Account No. 50-2091.

In an effort to ease the Examiner's burden, this Response focuses solely on several aspects of the independent claims that are clearly differentiable from the art cited in the Office Action. Although other aspects of the various dependent and independent claims even further differentiate the present inventions from the prior art, a detailed analysis of these aspects would be cumulative, and is therefore not presented at this time. While Applicant believes that each of the pending claims are now in condition for allowance, nevertheless reserves the right to raise additional issues at a later date during prosecution or on appeal, should such action become necessary.

**CLAIMS 39-55**

The Office Action rejects each of these claims, stating that it would be obvious to combine a touch sensor as described in US Patent No. 5,592,998 ("Clancy") with an insulating layer mentioned in US Patent No. 6,686,546 ("Chiu"). Applicant respectfully traverses the rejection in that even the cited combination would fail to disclose the inventions described by claims 39-55. Chiu describes an insulating layer placed on the electrodes to protect against environmental effects such as "abrasion, contamination and electrostatic discharge".<sup>1</sup> In contrast to the Chiu insulating layer, Applicant's claims recite a ground plane that is electrically conductive and that is configured to shield the bottom side of the conductive traces opposite the

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<sup>1</sup> See Chiu col. 5, lines 18-19.

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input object. These features of the ground plane provide shielding against electrical noise sources (e.g. noise emanating from a display located on the back side of the touch sensor) that would not be available from the Chiu insulating layer.<sup>2</sup> Because the Chiu reference describes an insulating layer that is structurally and functionally distinct from the ground plane contained in Applicant's claims, even the combination of the two references does not disclose each and every element of Applicant's claims, and reconsideration is requested.

**CLAIMS 60-63**

The Office Action correctly states that the Clancy reference fails to disclose "conductive traces in the X-axis and the Y-axis forming a substantially space-filling pattern," yet claims that it would be obvious to create such a pattern using the silk screening technique referenced by Clancy. Applicant has clarified that the subject language relates to conductive traces in one axis substantially filling gaps between conductive traces in the other axis, which is in no way described or suggested within the Clancy reference.<sup>3</sup> To the contrary, Clancy expressly emphasizes that the traces are shaped to "leave substantial room for light to project through the array".<sup>4</sup> Applicant respectfully submits that the mere mention of a silk screening/printing process for placing electrodes on a substrate falls far short of disclosing or suggesting the particular gap-filling scheme now recited in claim 60.

Additionally, although the Office Action cites col. 5, lines 29-33 of Clancy as disclosing a plurality of layers in the sensing array having similar indices of refraction (as recited in claim 61), the cited language relates only to the sizing of the traces and the sizing of the images projected by the LCD, and does not refer to index of refraction in any manner whatsoever. Reconsideration is requested.

**CLAIMS 64-78**

As an accommodation to the Examiner and to clarify the scope of the claims, Applicant has amended each of these claims to clearly recite a "system comprising" a transparent touchpad disposed directly on a display, fingerprint sensor, or graphic overlay.<sup>5</sup> This amendment is

<sup>2</sup> See Applicant's Specification at page 13, lines 1-5.

<sup>3</sup> One embodiment of this concept is shown in Applicant's FIG. 5C and described in the accompanying text of the Specification.

<sup>4</sup> See Clancy at col. 5, lines 26-30.

<sup>5</sup> Examples are described in Applicant's Specification at least at page 8, line 9; page 12, line 12; and page 18, line 1.

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purely formalistic in nature, is not made for purposes relating to patentability, and is not narrowing in scope. Applicant therefore does not surrender any legal equivalents by this Amendment that would otherwise be available.

With respect to claims 64-68 and 73-76, the Office Action emphasizes the insertion of a polarizer between a crystal and a sensor in US Patent No. 6,411,344 ("Fujii"), correctly noting in several locations that the Fujii reference "does not specifically teach the plurality of conductors being disposed directly over the top polarizer layer". By placing the conductors directly on the display, several benefits (e.g. elimination of a separate substrate layer, improved integration between the display and sensor, ease of manufacturing) can be realized. Emphasizing the mere relocation of the polarizer within the Fujii reference therefore fails to disclose or suggest a touchpad directly disposed on the polarizer itself.

Regarding claims 69-72, the Office Action cites the combination of US Patents No. 4,931,782 ("Jackson") and 5,386,219 ("Greanias"), stating that the Greanias reference describes a set of conductors disposed over the viewing surface of a display. Admittedly, FIG. 3 of the Greanias reference appears at first glance to show a conductor 91 placed near the polarizer of a display. Upon careful review of the cited reference, however, Applicant respectfully notes that the lower conductor set (element 91 in FIG. 3) is not in fact directly disposed on the top polarizer. To the contrary, Greanias only contemplates that the touch sensor is formed as a separate assembly that is subsequently glued or otherwise affixed to the top of the display, such that the conductors are separated from the polarizer by a substrate or other supporting member.<sup>6</sup> Indeed, *the text of Greanias (at col. 9, lines 57-58) expressly states that "In [FIG. 3], the supporting structures such as substrates and adhesive layers are omitted."* As a result, the Greanias disclosure fails to disclose *conductors disposed directly on said top polarizer layer* as recited in claim 69.

Regarding claim 77, the Office Action cites US Patent No. 4,290,052 ("Eichelberger") as disclosing a fingerprint sensor with a transparent touchpad formed thereon. Even if the cited reference does disclose a fingerprint sensor (as previously disputed by Applicant), it is clear that the sensor disclosed is not transparent. While the touch panel 10 described in Eichelberger does purport to contain a glass insulative panel 11 that is presumably transparent, it is clear at least

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<sup>6</sup> See, e.g., Greanias at col. 18, lines 56-62 and col. 20, lines 37-68.

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layer 16 of the Eichelberger panel is made of non-transparent printed circuit board<sup>7</sup> that contains a cutout hole through which the LCD screen can be viewed.<sup>8</sup> The Eichelberger reference therefore fails to disclose a transparent touchpad directly disposed on a fingerprint sensor, as recited in claim 77.

The Office Action similarly fails to disclose a transparent touchpad directly disposed on a passive graphical overlay, as recited in claim 78. To the contrary, the cited reference (US Patent No. 5,909,211 ("Combs")) describes a touch overlay that acts as an input "in compliance with the selected overlay".<sup>9</sup> In contrast, the present claim 78 recites a passive overlay that has no electrical interaction with the transparent touchpad formed directly thereon.

Reconsideration of each claim 64-78 is therefore respectfully requested.

#### CLAIMS 79-81

The Office Action rejected each of claims 79-81, again citing the Clancy reference but noting that "Clancy does not specifically teach the capacitive sensor having a substantially uniform transmissivity within said active area". Indeed, Clancy actually teaches away from uniform transmissivity across the active area when it states that the array of traces is sized "to leave substantial room for light to project through the array".<sup>10</sup> Clancy further states that "where traces 72 and 76 are not completely transparent, the capacitive elements and traces may interfere to some degree with the image".<sup>11</sup> In view of these statements, it is clear that Clancy does not teach or suggest uniform transmissivity within the active area of the transparent touch sensor, and actually assumes that transmissivity is non-uniform across the active area. Applicant has further expanded on several exemplary features that provide uniform transmissivity in new dependent claims 82-85.

<sup>7</sup> See Eichelberger col. 3, lines 43-47.

<sup>8</sup> Id. at col. 5, lines 37-40.

<sup>9</sup> Combs at col. 2, lines 60-65.

<sup>10</sup> Clancy at col. 5, lines 26-33.

<sup>11</sup> Id.

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Each of the pending claims are therefore believed to be allowable over the prior art of record for the various reasons set forth above. Applicant therefore respectfully requests reconsideration of the remaining rejections and allowance of all pending claims. Should the Examiner have any questions or wish to further discuss this application, Applicant's counsel may be reached at (480) 385-5060 or bcarlson@ifllaw.com.

Respectfully submitted on behalf of  
SYNAPTICS INCORPORATED, ASSIGNEE

Dated: 5/6/2005

By: 

Brett A. Carlson

U.S. Registration No. 39,928

**INGRASSIA FISHER & LORENZ, P.C.**

Customer No. 29906

PTO/SA/06 (12-04)

Approved for use through 7/31/2006. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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<b>PATENT APPLICATION FEE DETERMINATION RECORD</b>						Application or Docket Number <b>028.1105 (20864.00700)</b>	
Substitute for Form PTO-875							
<b>APPLICATION AS FILED – PART I</b>							
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)	
BASIC FEE (37 CFR 1.18(a), (b), or (c))	N/A	N/A	N/A		N/A		
SEARCH FEE (37 CFR 1.18(k), (l), or (m))	N/A	N/A	N/A		N/A		
EXAMINATION FEE (37 CFR 1.18(o), (p), or (q))	N/A	N/A	N/A		N/A		
TOTAL CLAIMS (37 CFR 1.18(i))	33	minus 20 =	• 13	X =	X =		
INDEPENDENT CLAIMS (37 CFR 1.18(h))	1	minus 3 =	• 0	X =	X =		
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				N/A		N/A	
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL		TOTAL	
<b>APPLICATION AS AMENDED – PART II</b>							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
Total (37 CFR 1.16(g))	• 30	Minus	** 33	= 0	X =	X =	
Independent (37 CFR 1.16(h))	• 2	Minus	*** 3	= 0	X =	X =	
Application Size Fee (37 CFR 1.16(s))							
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				N/A		N/A	
				TOTAL		TOTAL	
				ADD'L FEE		ADD'L FEE	
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
Total (37 CFR 1.16(g))	• 42	Minus	** 33	= 9	X =	X =	
Independent (37 CFR 1.16(h))	• 8	Minus	*** 3	= 5	X =	X =	
Application Size Fee (37 CFR 1.16(s))							
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				N/A		N/A	
				TOTAL		TOTAL	
				ADD'L FEE		ADD'L FEE	

\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.  
 \*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".  
 \*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".  
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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FOR	NUMBER FILED	NUMBER EXTRA		RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A		N/A			
SEARCH FEE (37 CFR 1.18(k), (l), or (m))	N/A	N/A		N/A		N/A			
EXAMINATION FEE (37 CFR 1.18(a), (p), or (q))	N/A	N/A		N/A		N/A			
TOTAL CLAIMS (37 CFR 1.16(i))	33	minus 20 =		X	=	X	=		
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MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.18(i))									
				N/A		N/A			
				TOTAL		TOTAL			
* If the difference in column 1 is less than zero, enter "0" in column 2.									
<b>APPLICATION AS AMENDED – PART II</b>									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDI-TIONAL FEE (\$)	RATE (\$)	ADDI-TIONAL FEE (\$)		
	Total (37 CFR 1.156))	30	Minus	42	=	0	X	=	
	Independent (37 CFR 1.156(b))	10	Minus	5	=	5	X	=	
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.156(j))								
				TOTAL	ADD'L FEE				
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT D	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDI-TIONAL FEE (\$)	RATE (\$)	ADDI-TIONAL FEE (\$)		
	Total (37 CFR 1.156))	35	Minus	42	=	0	X	=	
	Independent (37 CFR 1.156(b))	11	Minus	10	=	1	X	200	200
	Application Size Fee (37 CFR 1.18(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.156(j))								
				TOTAL	ADD'L FEE				
				TOTAL	ADD'L FEE				
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.									

This collection of information is required by 37 CFR 1.18. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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